



Sharing geospatial data within the European Green Deal Data space – a technological and organisational perspective

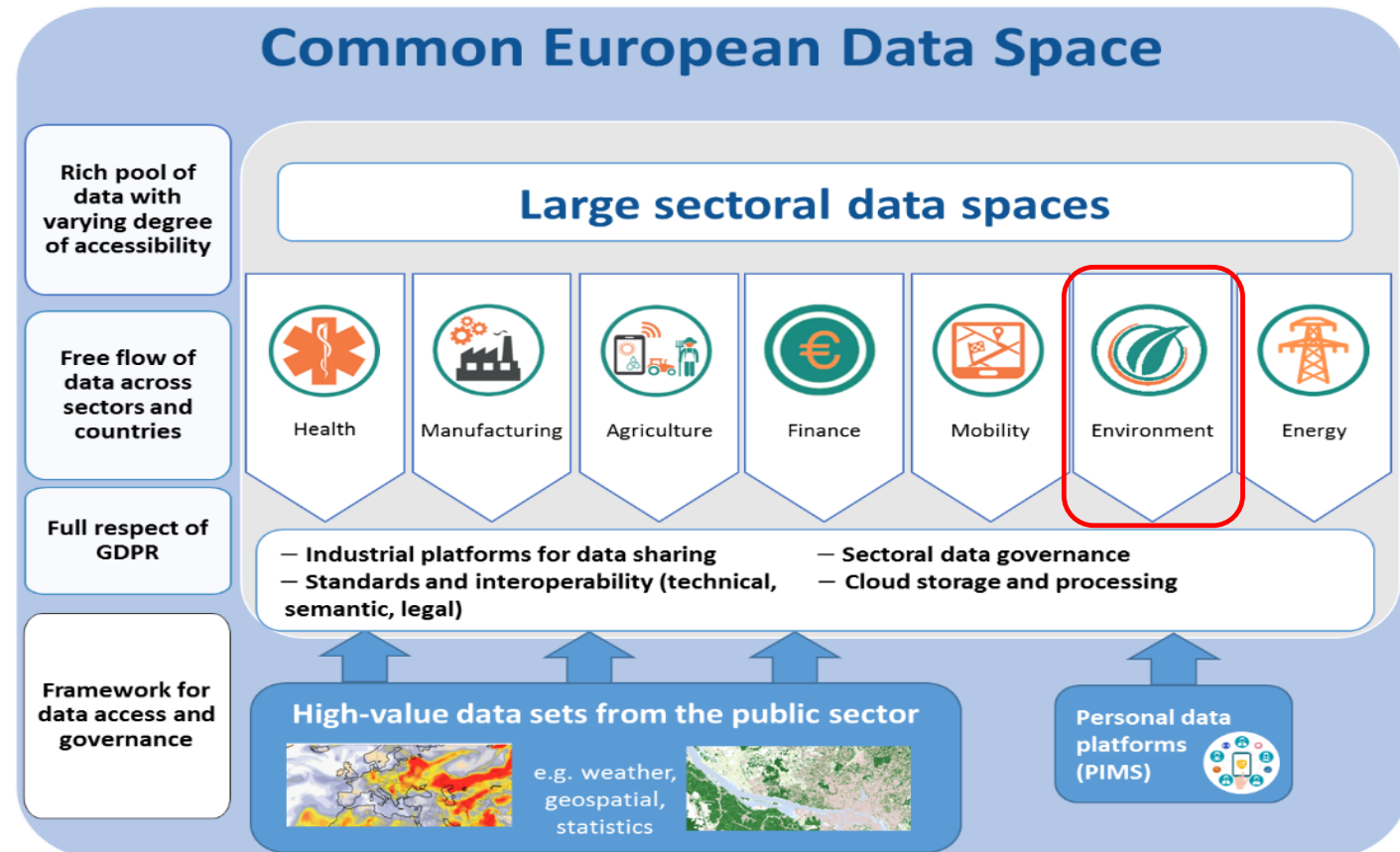
Francesco Pignatelli, Alex Kotsev

*UN-GGIM Europe Side Event: European
Data Policy*



The policy context around data

- **European Strategy for Data:**
 - Establishment of a single market for data through sector-specific data spaces.
 - No explicitly geospatial data space
 - Different actors interplaying in the data economy (public sector, businesses, citizens, and academia)





How to modernise INSPIRE/SDIs within European Data Spaces?

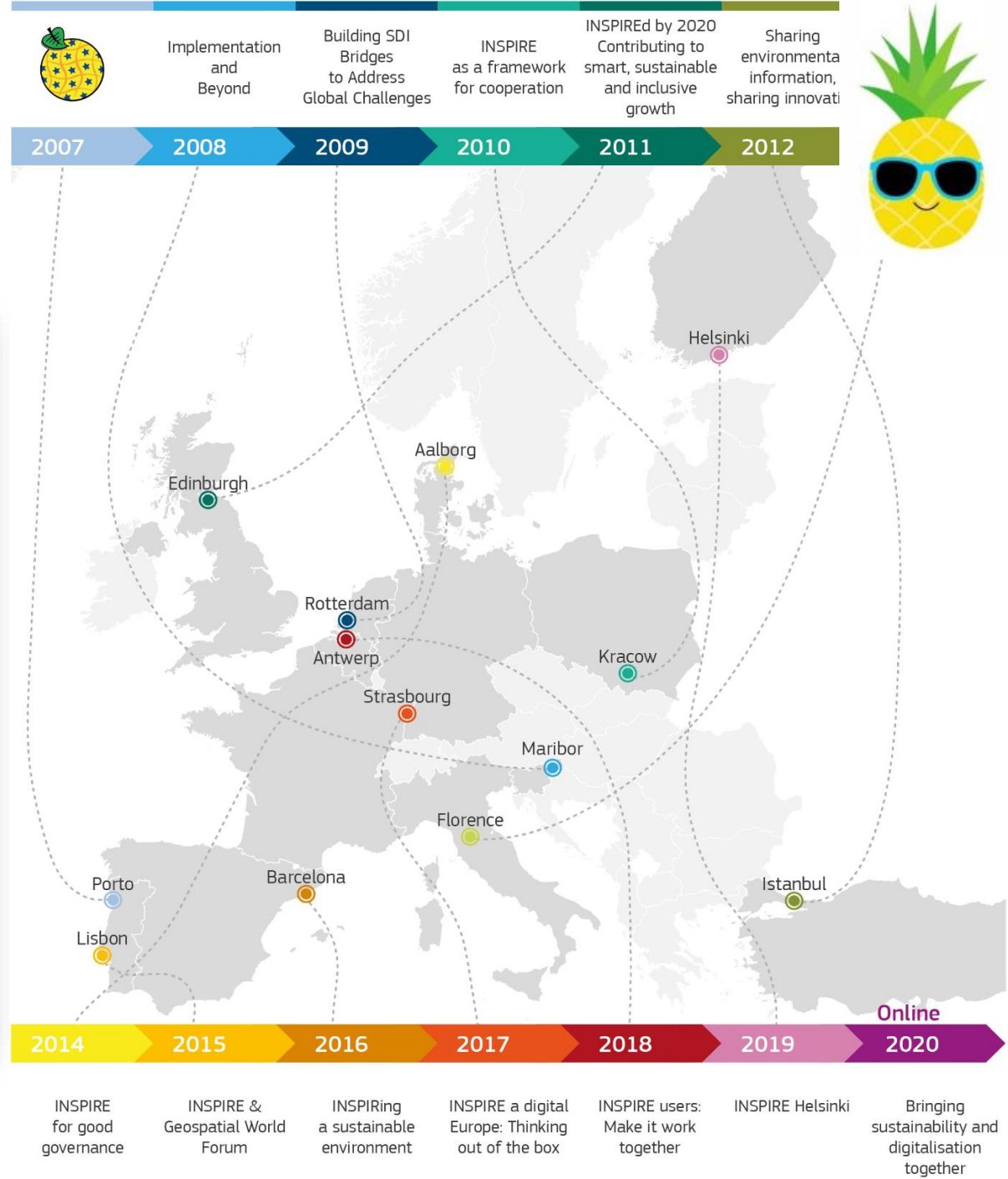


JRC Science for Policy Report

- Prepared in collaboration with ENV and Geonovum
- Contents
 - State of play
 - Policy and technological context
 - Lessons learned from the implementation
 - Vision for the technological evolution
 - Prototype reference framework
 - Actions and roadmap



Lessons learned Community



Lessons learned

Data availability & E-reporting



- Improving discoverability and accessibility
- Use of INSPIRE in e-reporting.

INSPIRE GEOPORTAL
Enhancing access to European spatial data

European Commission > INSPIRE > Geoportal

Home | Priority Data Sets Viewer | Thematic Viewer | Harvesting status | Find out more about

INSPIRE Data Sets - EU & EFTA Country overview

INSPIRE Geoportal Data Set Statistics

- 91433 Metadata records
- 44789 Downloadable Data Sets
- 46451 Viewable Data Sets

Spatial scope coverage: ☐ National ☐ Regional

Select a COUNTRY

Country	Metadata records	Downloadable Data Sets	Viewable Data Sets
Austria	630	410	493
Belgium	577	377	488
Bulgaria	263	97	99
Croatia	146	10	22
Cyprus	42	32	34
Czech Republic	165	60	87
Denmark	207	113	99
Estonia	87	41	54
Finland	597	88	238
France	218	75	17
Germany	65393	41149	42184
Greece	59	59	59
Hungary	121	23	20
Iceland	147	7	0
Ireland	76	0	0
Italy	19470	528	668
Latvia	166	100	99
Liechtenstein	69	10	12
Lithuania	132	126	59
Luxembourg	304	283	243
Malta	150	149	150
Netherlands	220	126	146
Norway	161	71	28
Poland	163	109	97
Portugal	622	350	496
Romania	103	35	38
Slovakia	345	81	96
Slovenia	91	12	32
Spain	246	75	172
Sweden	245	189	217
Switzerland	218	2	4

Select the whole EUROPE

Download stats

INSPIRE Geoportal Version: 1.5.0



EUROPEAN DATA PORTAL

English (en) | Site content

Data | Impact & Studies | Training | News & Events | About

Datasets | SPARQL Search | Statistics | Metadata Quality

Filter by location | Order by: Last Modified | Datasets Feed | Catalogues

inspire

86668 datasets found

INSPIRE view service WMS on the issue of Nadia Grid (EL GRID)

INSPIRE WMS View Service for data Elevation - GRID (EL) provides a possibility to view data image for INSPIRE theme Elevation. The data are harmonised according to INSPIRE Implementing Rules. The service fulfils Technical guidance for INSPIRE view services v. 3.11 and simultaneously fulfils the OGC ...

WMS Created Updated 26.05.2017 02:00

Geoportal Czech Office for Surveying, Mapping and Cadastre

Settings

Operator AND OR

Countries

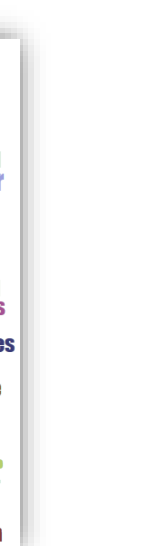
Country	Count
Czechia	38836
Germany	18130
France	18070
United Kingdom	4553
Belgium	2212
Spain	1879
Austria	546
Netherlands	441
Poland	437

WMS DB-Netz rail network

INSPIRE WMS Rail Network (INSPIRE TN-RA)

WMS Created 20.06.2020 20:26 Updated 16.06.2020 02:00

A cartoon illustration of a yellow pineapple with a green crown of leaves. The pineapple has a simple, happy face with a curved line for a smile and is wearing a pair of bright blue sunglasses with black lenses.

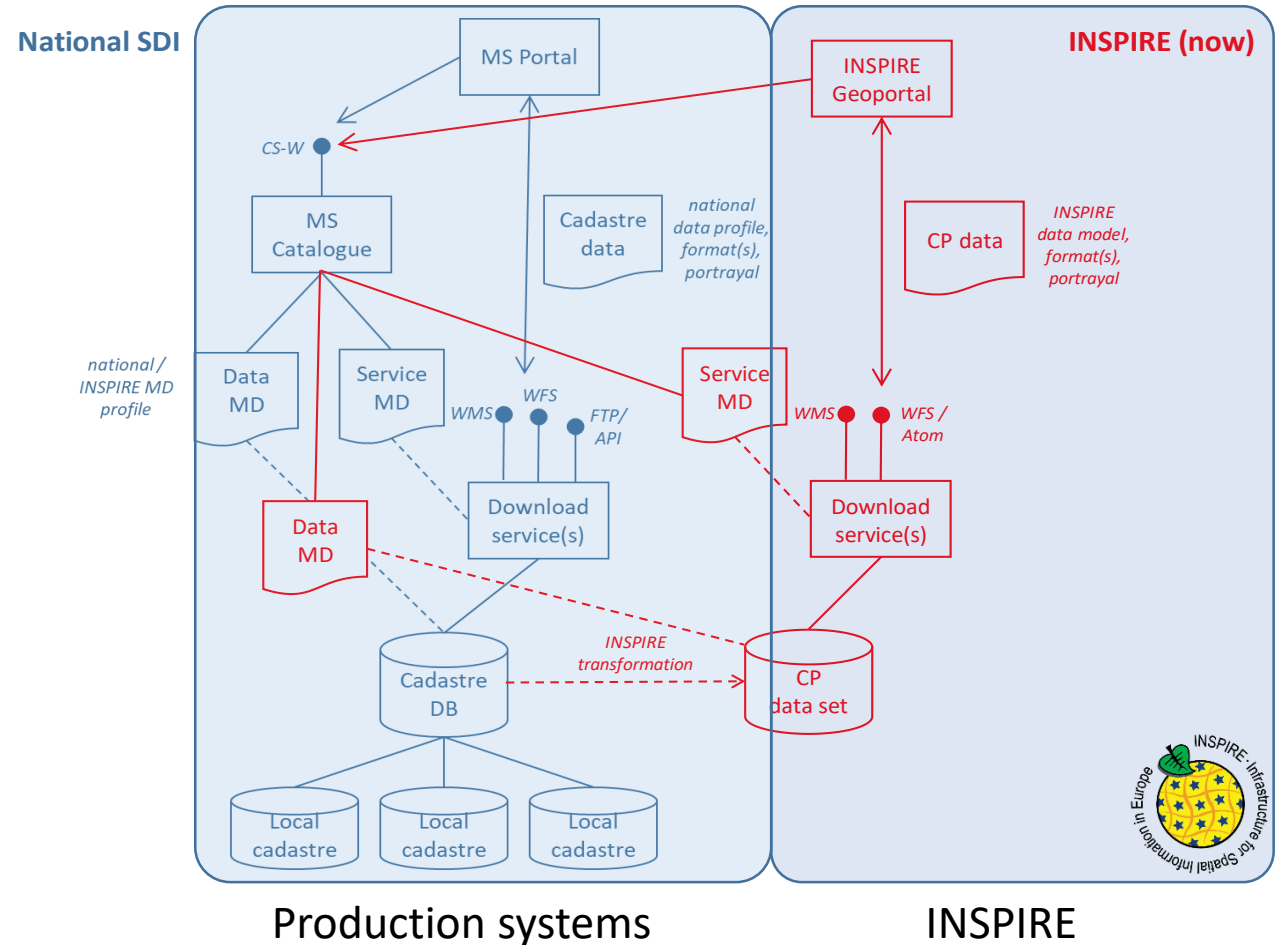


Lessons learned - What does not work so well

Inappropriate organisational approaches



- Parallel implementations.
- Duplication of efforts.
- INSPIRE sometimes implemented to only check a box.



Lessons learned - What does not work so well

Rigidity in standardisation



- Adherence to specific technologies / encodings.
- Strictly following standards vs. Narrow use of standards.
- Custom extensions: Extending standards is problematic.
 - Extended capabilities.
 - GML attributes.
 - Nested structures.



Lessons learned - What does not work so well

Complexity



```
<gn:NamedPlace gml:id="MIG20172_example_NamedPlace">
  <gn:beginLifespanVersion xsi:nil="true"/>
  <gn:geometry>
    <gml:Point gml:id="d7180a8f-a590-44da-8b45-41d96d5cba5e" srsName="http://www.opengis.net/def
    <gml:pos>471979.2568 5564594.2444</gml:pos>
    </gml:Point>
  </gn:geometry>
  <gn:inspireId>
    <base:Identifier>
      <base:localId>NamedPlace_Example</base:localId>
      <base:namespace>https://www.examples.eu/</base:namespace>
    </base:Identifier>
  </gn:inspireId>
  <gn:localType xsi:nil="true"/>
  <gn:name>
    <gn:GeographicalName>
      <gn:language>deu</gn:language>
      <gn:nativeness xsi:nil="true"/>
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      </gn:spelling>
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  </gn:name>
  <gn:name>
    <gn:GeographicalName>
      <gn:language>eng</gn:language>
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      <gn:sourceOfName xsi:nil="true"/>
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      </gn:spelling>
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  </gn:name>
  <gn:type xsi:nil="true"/>
</gn:NamedPlace>
```

OpenStreetMap Modifica Cronologia Esporta

Traccati GPS Diari degli utenti Copyright Aiuto Informazioni mingo23

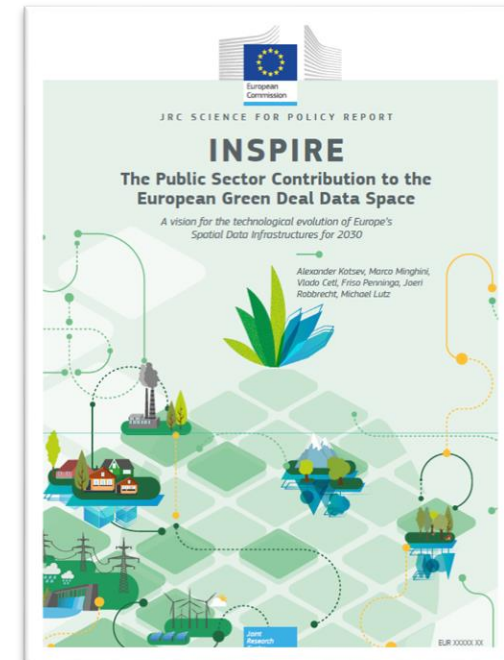
Etichette

alt_name:la	Monachium,Monachum
capital	4
ele	519
int_name	Munich
is_in_country_code	DE
is_in_iso_3166_2	DE-BY
name	München
name:als	Münche
name:ar	ميونخ
name:az	Münhen
name:bar	Minga
name:be	Мюнхен
name:be-larask	Мюнхэн
name:bg	Мюнхен
name:ca	Munic
name:cs	Mnichov
name:da	München
name:de	München

<https://www.openstreetmap.org/node/1700534808#map=12/48.1332/11.6462>

Vision for the future

- INSPIRE should 'blend in' with the broader ecosystem of spatial and non-spatial data, infrastructures, technologies and policies.
- This will mean opening up to a broader community of implementers and users and to a wider range of applications and use cases.
- Making the INSPIRE framework more flexible and agile will significantly lower the entry level to the sharing and utilisation of data.
- Technical approaches need to be simplified by reusing well-adopted standards and technologies.



MIWP 2021-2024 Examples

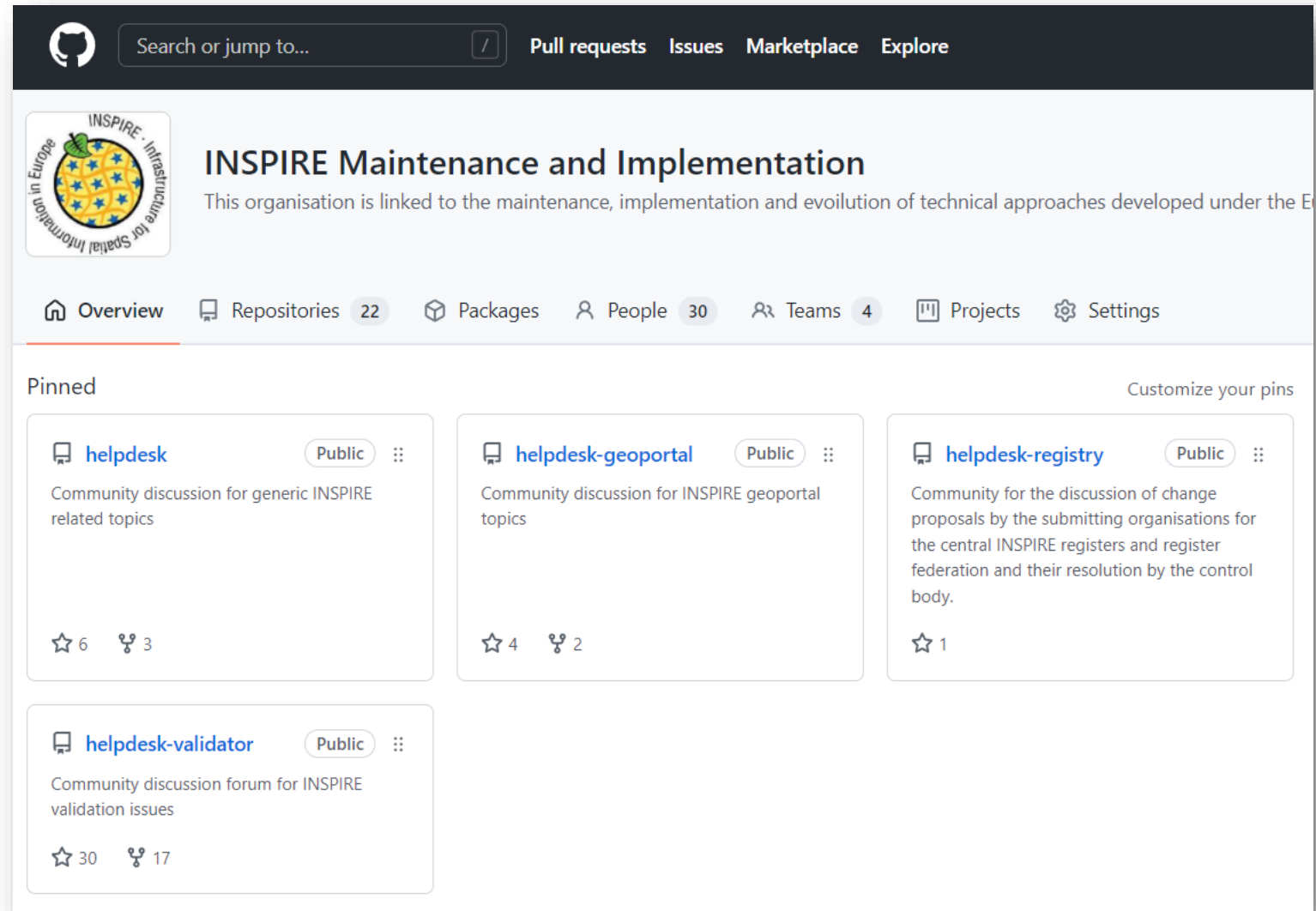
'Mainstreaming' INSPIRE - GitHub

- **GitHub works!**

2 Levels of support:

Level 1 – General support that includes checking, immediate answering and moving questions to the right Level 2.

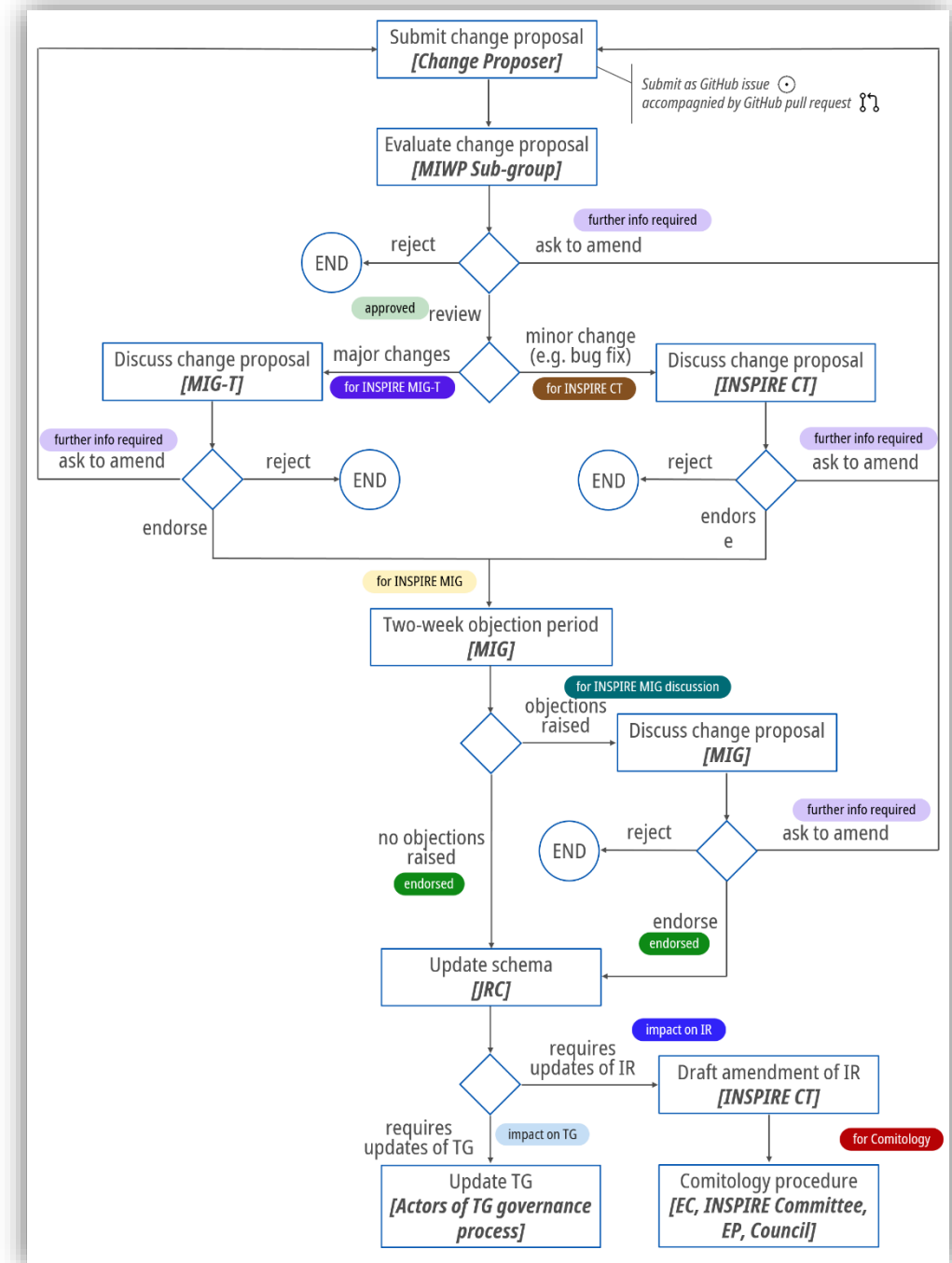
Level 2 – Provision of concrete solution.



MIWP 2021-2024 Examples

Governance of artefacts

- Open the floor to proposals from the community.
- Transparent approach for governance of the artefacts:
 - Sub-group and facilitators.
 - Decision tree and release plan:
 - Know how to approach each issue.
 - 2 Releases are planned per year, aligned with the MIG-T Meetings.



MIWP 2021-2024 Examples

The Toolbox



- Ensure long-term sustainability of the components
- Build strategic partnerships with communities:
 - GeoNetwork as geoportal backend.
 - Registry in OSGeo.
- Decouple tools from infrastructure.
- Extensive use of the cloud.

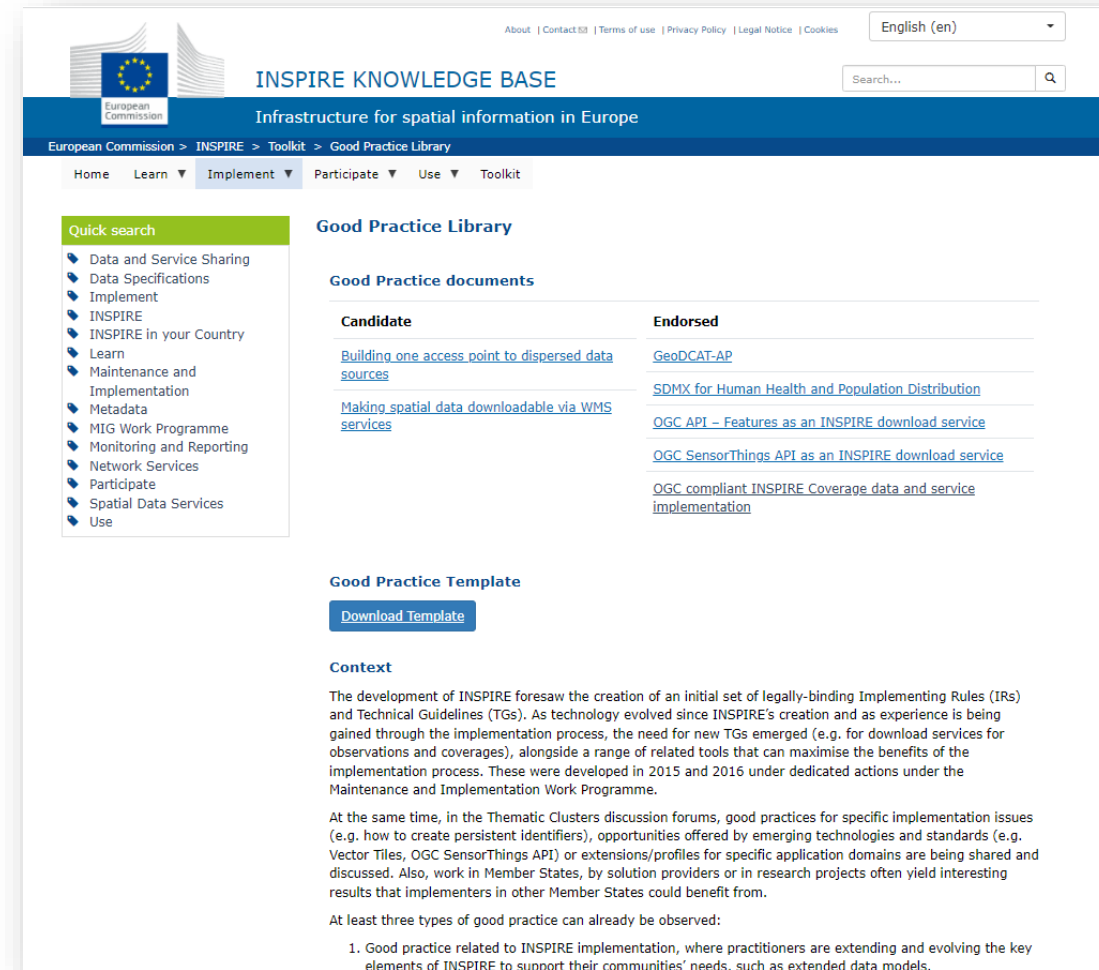
The screenshot shows the Re3gistry website. At the top is the OSGeoLive logo and a navigation menu with links: Home, Contents, Download, Metrics, Sponsors, and Contact Us. Below the menu is the 'Re3gistry' title and an 'About' section. The 'About' section describes Re3gistry 2 as a reusable open source solution for managing and sharing 'reference codes'. It mentions that it was initially developed as a central component of the EU's INSPIRE infrastructure. Below the 'About' section is the 'Core Features' list, which includes: User-friendly editing interface, Management of the full lifecycle of the reference codes, Highly flexible and customisable data models, Multi-lingual content support, Support for versioning, RESTful API with content negotiation, Free-text search, Supported formats (HTML, ISO 19135 XML, JSON), Service formats can be easily added or customised, Multiple authentication options, Externally governed items referenced through URIs, INSPIRE register federation format support, and Web-app to access the reference codes in a human readable way. At the bottom is the 'Details' section, which provides the website URL (https://github.com/ec-jrc/re3gistry), the licence (EUPL), the software version (2.0.0), and the supported platforms (Windows, Linux). On the right side of the screenshot, there is a preview of the Re3gistry 2 web application interface, showing a 'Manage the content' section with a list of items and a 'URI' field.

MIWP 2021-2024 Examples

Modernise the technological stack of INSPIRE within the remit of legislation

- **Good practices.**
- Updated Good Practice library available.
- Procedure for endorsement:
 - *Step1. Initiation.*
 - *Step 2. Submission as good practice candidate.*
 - *Step 3. Outreach.*
 - *Step 4. Submission.*
 - *Step 5. Legal scrutiny.*
 - *Step 6. Feedback.*

<https://inspire.ec.europa.eu/portfolio/good-practice-library>



The screenshot displays the INSPIRE Knowledge Base website. The header includes the European Commission logo, the text 'INSPIRE KNOWLEDGE BASE', and a search bar. The main navigation bar lists 'Home', 'Learn', 'Implement', 'Participate', 'Use', and 'Toolkit'. The 'Implement' tab is active, leading to the 'Good Practice Library' page. On the left, a 'Quick search' sidebar lists various topics like 'Data and Service Sharing', 'Data Specifications', 'Implement', 'INSPIRE', 'INSPIRE in your Country', 'Learn', 'Maintenance and Implementation', 'Metadata', 'MIG Work Programme', 'Monitoring and Reporting', 'Network Services', 'Participate', and 'Spatial Data Services'. The main content area is titled 'Good Practice Library' and features a table of 'Good Practice documents'. The table has two columns: 'Candidate' and 'Endorsed'. Under 'Candidate', there are links for 'Building one access point to dispersed data sources' and 'Making spatial data downloadable via WMS services'. Under 'Endorsed', there are links for 'GeoDCAT-AP', 'SDMX for Human Health and Population Distribution', 'OGC API – Features as an INSPIRE download service', 'OGC SensorThings API as an INSPIRE download service', and 'OGC compliant INSPIRE Coverage data and service implementation'. Below the table, there is a 'Good Practice Template' section with a 'Download Template' button. The 'Context' section provides background information on the development of INSPIRE and the role of good practices in its implementation.

INSPIRE KNOWLEDGE BASE
Infrastructure for spatial information in Europe

European Commission > INSPIRE > Toolkit > Good Practice Library

Home Learn Implement Participate Use Toolkit

Quick search

- Data and Service Sharing
- Data Specifications
- Implement
- INSPIRE
- INSPIRE in your Country
- Learn
- Maintenance and Implementation
- Metadata
- MIG Work Programme
- Monitoring and Reporting
- Network Services
- Participate
- Spatial Data Services
- Use

Good Practice Library

Good Practice documents

Candidate	Endorsed
Building one access point to dispersed data sources	GeoDCAT-AP
Making spatial data downloadable via WMS services	SDMX for Human Health and Population Distribution
	OGC API – Features as an INSPIRE download service
	OGC SensorThings API as an INSPIRE download service
	OGC compliant INSPIRE Coverage data and service implementation

Good Practice Template

[Download Template](#)

Context

The development of INSPIRE foresaw the creation of an initial set of legally-binding Implementing Rules (IRs) and Technical Guidelines (TGs). As technology evolved since INSPIRE's creation and as experience is being gained through the implementation process, the need for new TGs emerged (e.g. for download services for observations and coverages), alongside a range of related tools that can maximise the benefits of the implementation process. These were developed in 2015 and 2016 under dedicated actions under the Maintenance and Implementation Work Programme.

At the same time, in the Thematic Clusters discussion forums, good practices for specific implementation issues (e.g. how to create persistent identifiers), opportunities offered by emerging technologies and standards (e.g. Vector Tiles, OGC SensorThings API) or extensions/profiles for specific application domains are being shared and discussed. Also, work in Member States, by solution providers or in research projects often yield interesting results that implementers in other Member States could benefit from.

At least three types of good practice can already be observed:

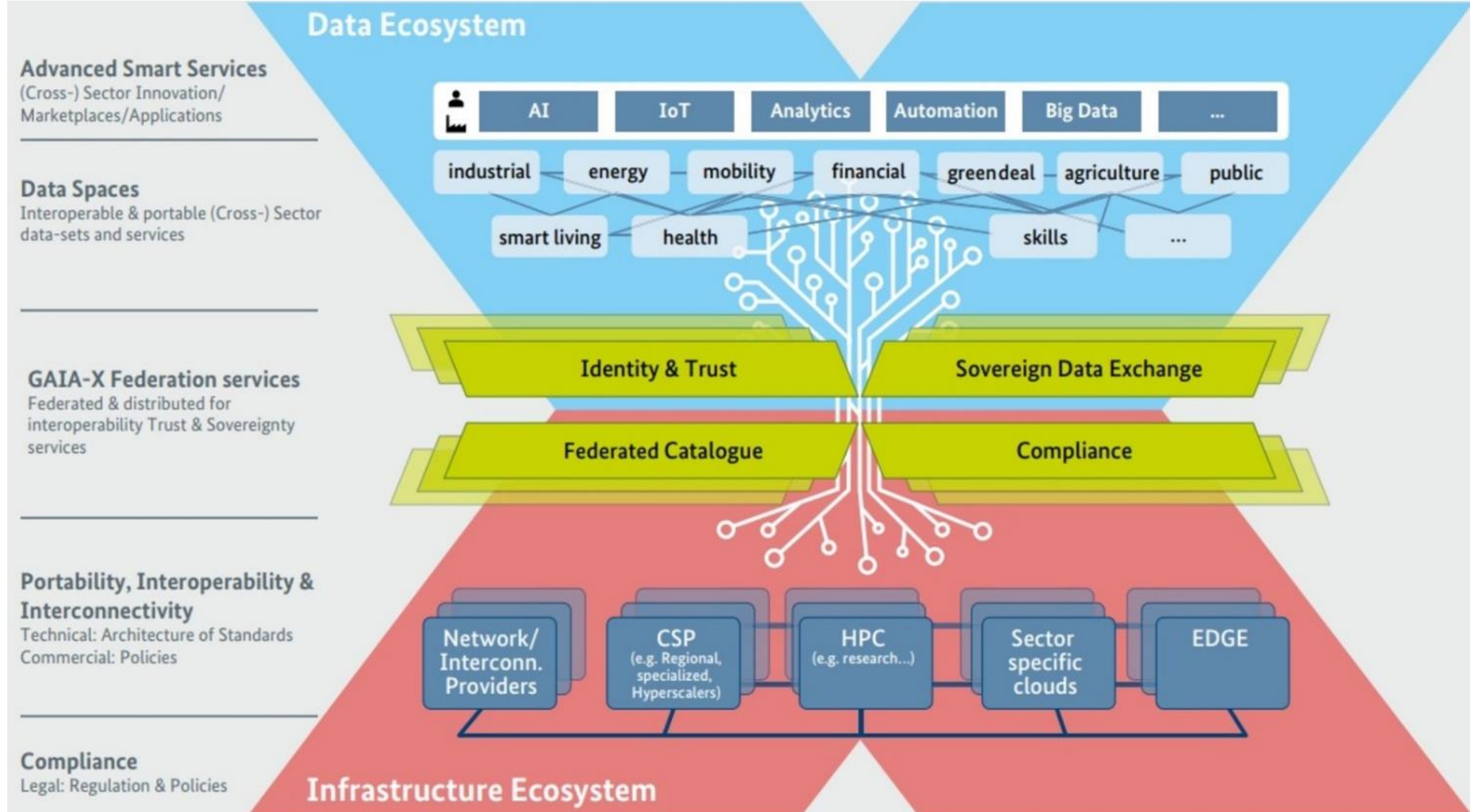
1. Good practice related to INSPIRE implementation, where practitioners are extending and evolving the key elements of INSPIRE to support their communities' needs, such as extended data models.



Conceptual integration of INSPIRE datasets and services with GAIA-X



MIWP 2021-2024 Examples GAIA-X



GAIA-X and INSPIRE

Contractor: Fraunhofer IOSB

Objective: Hands-on evaluation of the GAIA-X architecture in the context of a relevant INSPIRE use case

Tasks:

- 1) Shortlist and prioritise INSPIRE use cases, incl. the necessary datasets and services
- 2) Mandatory and optional steps for implementing the selected use case
- 3) Conceptual implementation, incl. the necessary artefacts
- 4) Summary of the activities and steps towards a prototypical implementation
- 5) Webinar

Want to know more ...



THURSDAY 28/10



10:00-11:30

Modernising INSPIRE within the European Green Deal data space – a technological and organisational perspective



13:30-15:00

Data exchange and harvesting - e-Reporting and thematic portals



15:30-17:00

Smart from local to global

FRIDAY 29/10



10:00-11:30

Location based data for crisis management



13:30-15:00

Closing Session - Towards a Common European Green Deal data space for environment and sustainability

Location interoperability good practices – ELISE framework and support

Francesco Pignatelli

14/10/2021

UN-GGIM Europe Side Event: European Data Policy



European Location Interoperability
Solutions for e-Government

*Enabling Digital Government through
Geospatial and Location Intelligence*

A BIT OF HISTORY...

2004

IDABC: Interoperable Delivery of European eGovernment Services

2010

ISA: Interoperability solutions for public administrations

Actions:

EULF
ARE3NA

2016

ISA²: Interoperability Solutions for European Public Administrations, Businesses and Citizens

ELISE

2021

DIGITAL: Digital Europe Programme

ELISE builds upon the outcomes of the former ISA actions EULF and ARE3NA. It is the only action of the ISA² Programme, aiming to improve Digital Government through Location Interoperability.



WHAT?

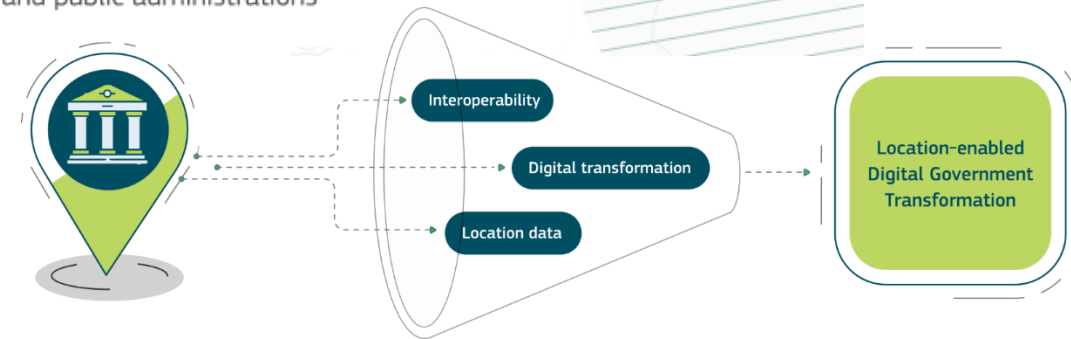
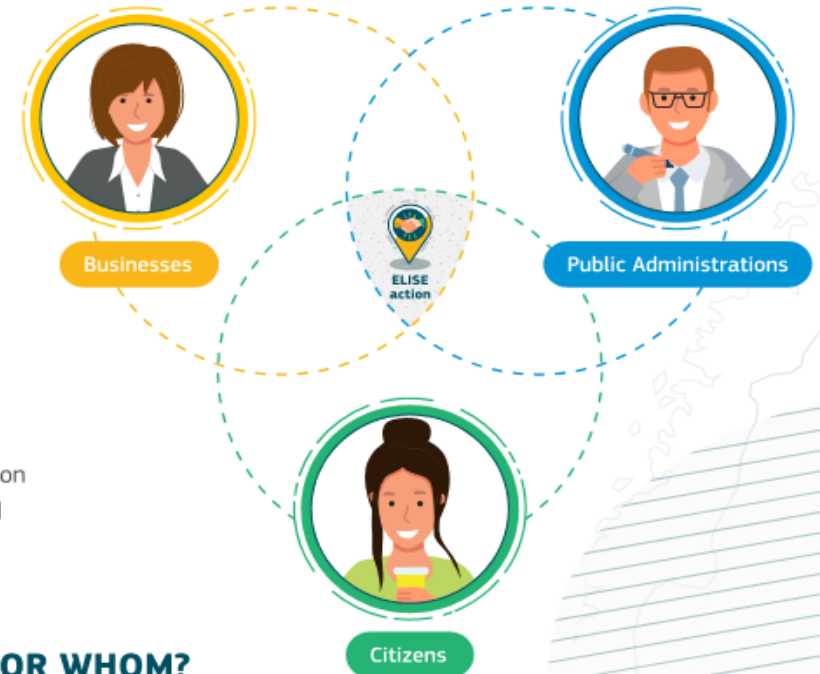
ELISE stands for **E**uropean **L**ocation **I**nteroperability **S**olutions for e-Government. It is one of the more than 50 actions in the European Interoperability Programme ISA².

WHAT FOR?

To support Digital Government Transformation by making the best use of location data and technologies in an interoperable manner

FOR WHOM?

For all: citizens, businesses and public administrations



ISA²

ELISE outputs and topics

ELISE impact in numbers

More than 10,000
interactions with ELISE
over the
past 6 years



41 Studies



1 Framework (Guidance/Monitoring)
11 Solutions



6 Applications



52 Webinars / 22 Workshops

Evolution of Spatial Data
Infrastructures

Support of data ecosystems

Technologies for location
-enabled innovation

Collaboration models

Spatial skills for Digital
Government Transformation

Location data privacy

Improving access to spatial
datasets

Supporting cross-border
and cross-sector data sharing

Location intelligence for policy
and digital public services

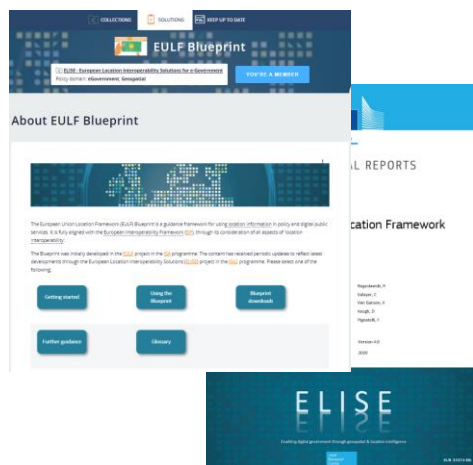
Supporting innovation, growth
and Return of Investment

Managing data quality

Supporting the creation of
common EU public services

European Union Location Framework (EULF) Blueprint – What is it?

A **European ‘location interoperability framework’** with **guidance** for the **exchange** and **use** of location information in government policy and digital public services, allied closely to the interoperability principles and scope of the **EIF**



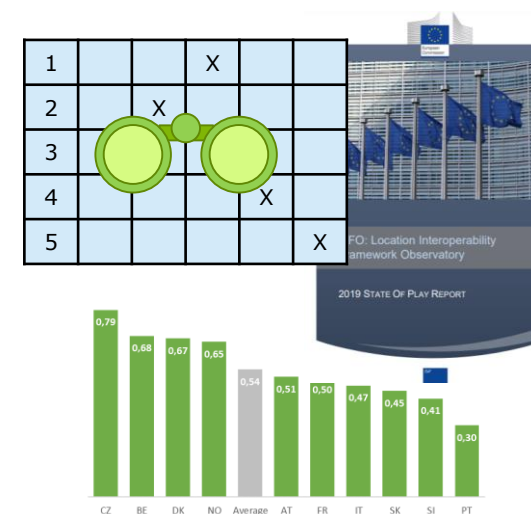
 **5 FOCUS AREAS**

 **19 RECOMMENDATIONS**

 **6 ROLES**

 **2 RELATED FRAMEWORKS**

 **49 BEST PRACTICES**



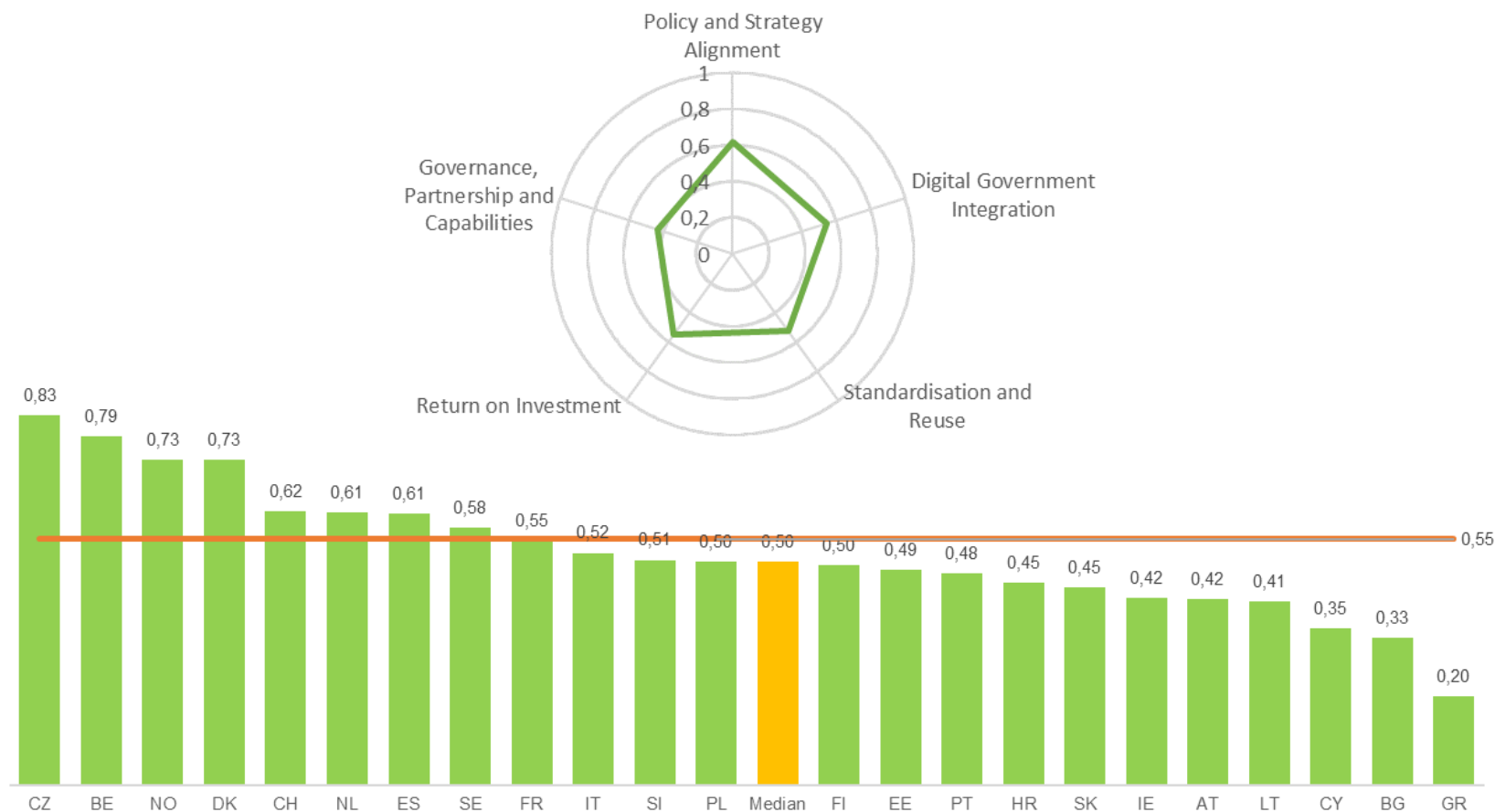
Online and downloadable versions

[European Union Location Framework \(EULF\) Blueprint](#) | Joinup

Adoption monitored through the LIFO

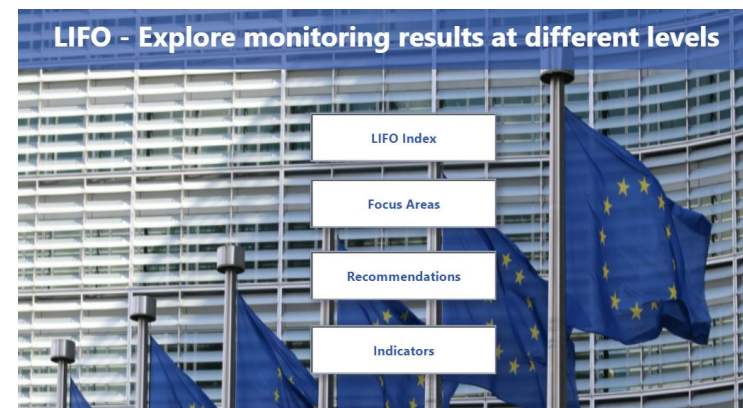
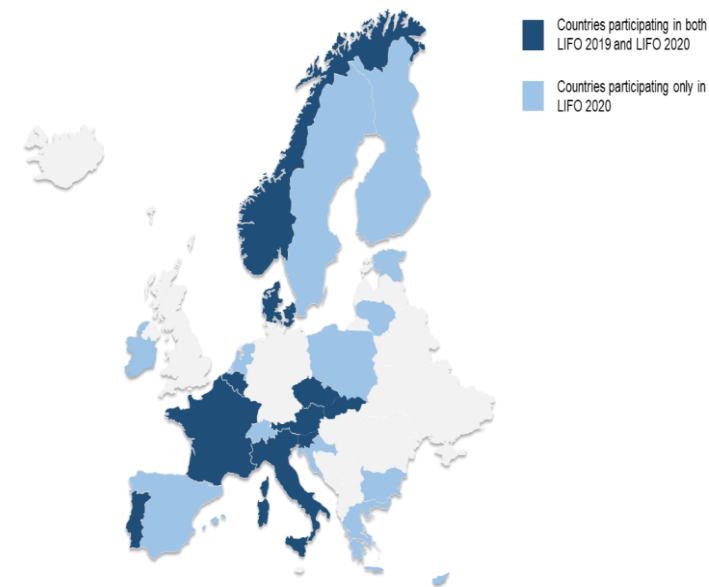
[Location Interoperability Framework Observatory \(LIFO\)](#) | Joinup

LIFO Monitoring 2020



Provisional results ahead of publication in November

ISA²



<https://joinup.ec.europa.eu/node/704247>

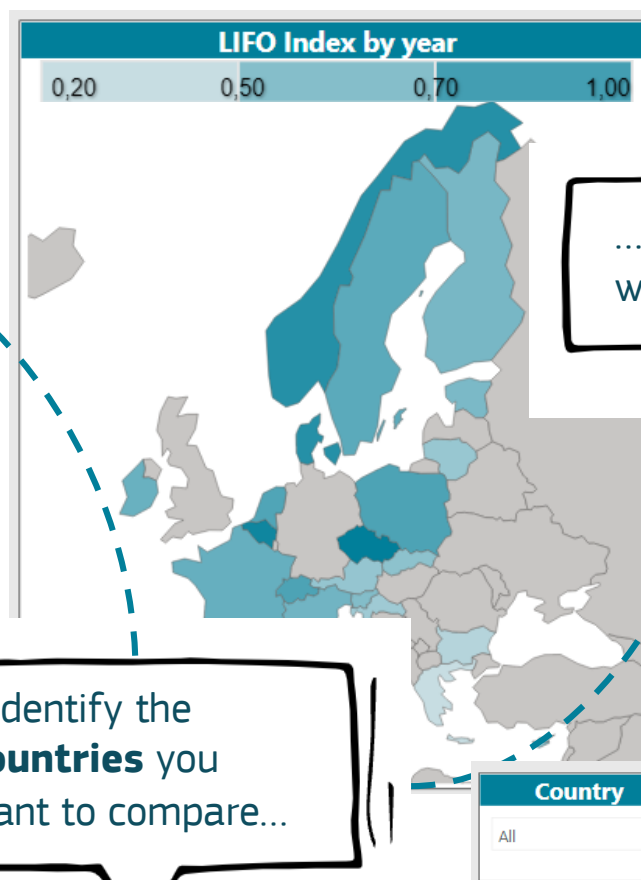
LIFO Interactive tool

Tailor your LIFO journey!

Choose which **level** to investigate...



...identify the **countries** you want to compare...



...the **year** you want to consider...

Year

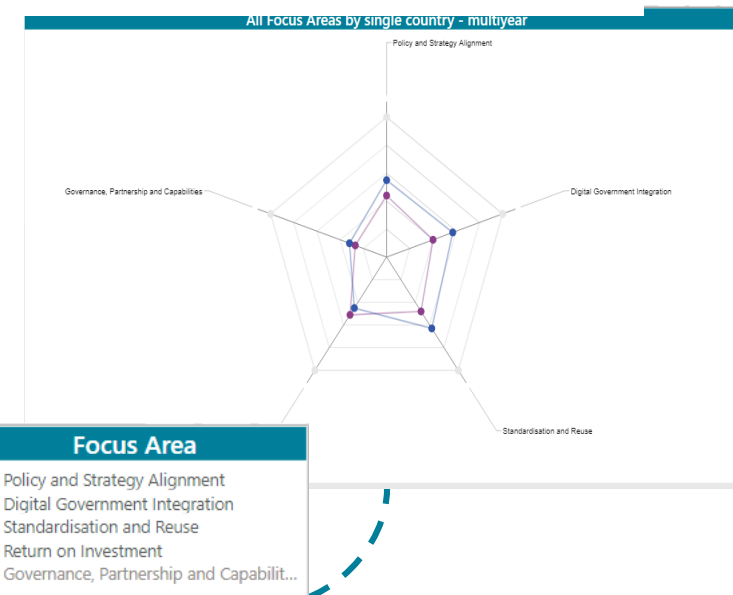
☐ 2019

☒ 2020

Country

All

...and which **visualisation** (heat map, radar chart) and **recommendation/focus area/indicator** to display!



Please visit LIFO interactive tool at <https://joinup.ec.europa.eu/node/704247>

EULF Blueprint / UN-GGIM IGIF links

*Detailed two way
cross references
between EULF
Blueprint
recommendations
and IGIF strategic
pathways, key
elements, actions
and tools*

			UN-GGIM IGIF STRATEGIC PATHWAYS								
			Governance and Institutions	Policy and Legal	Financial	Data	Innovation	Standards	Partnerships	Capacity and Education	Communication and Engagement
EULF BLUEPRINT RECOMMENDATION TOPICS	Policy and Strategy Alignment	1. Digital policy alignment	X	X			X				
		2. Data policy alignment		X							
		3. Location data privacy		X							
		4. Location data for policy evidence				X	X				
		5. Standards based procurement				X		X			
	Digital Government Integration	6. Location enabled digital public services					X				
		7. SDI integration	X	X		X	X				
		8. Open and collaborative development							X		X
		9. Location-based statistics				X	X				
	Standardisation and Reuse	10. Common architecture				X	X				
		11. Authentic data reuse				X	X				
		12. Use of standards						X			
		13. Location data quality				X					
	Return on Investment	14. Assessing and monitoring benefits	X	X	X						
		15. Communicating benefits	X	X	X						
		16. Innovation through access to data		X			X				
	Governance, Partnerships and Capabilities	17. Integrated governance	X								
		18. Effective partnerships							X		
		19. Communication and skills			X					X	X

Building on ELISE for the Digital Europe Programme

Digital Europe Programme Themes



High performance
computing



Cloud, data and
AI



Cybersecurity



Advanced
digital skills

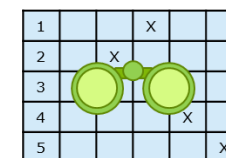


Accelerating
best use of
technologies

European Location Intelligence and Technological Enablers (ELITE)



EULF Blueprint



LIFO



Interoperability
Academy



Data Spaces
Cookbook



Sandboxing

Common Services Platform



ETF Validator



Re3gistry



Thank you



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